

## CLAIMS

1. Fastening device comprising a male part (1, 5, 7, 9) and a female part (2, 6, 8) selectively inserted into bores (30, 40) passing through a stack of at least two panels (3, 4), these parts selectively cooperating with one another to maintain the panels in a stack, in which device the female part (2, 6, 8) is an elastic clip formed by a cap (20, 60, 80) extended by a hollow foot (21, 61, 81) having different minimum (Dmin) and maximum (Dmax) internal transverse dimensions, in which the male part (1, 5, 7, 9) comprises a head (11, 51, 71, 91) extended by a barrel (10, 50, 70, 90) having at least a first given intermediate transverse dimension (D1), between the minimum (Dmin) and maximum (Dmax) internal transverse dimensions, this barrel being selectively inserted into the hollow foot (21, 61, 81) through an opening (24, 64, 84) in the cap, and the hollow foot (21, 61, 81) selectively adopting, as a function of at least one relative axial position of the barrel (10, 50, 70, 90) and the hollow foot (21, 61, 81), and for at least a first relative rotational position of the barrel and the foot, an unlocked configuration in which the foot (21, 61, 81) has a reduced transverse dimension, and a locked configuration in which the foot (21, 61, 81) is subjected by the barrel (10, 50, 70, 90) to a radial elastic expansion,

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characterized in that the cap (20, 60, 80) is formed by a spring blade bent back on itself and comprising at least one inner branch (201, 601, 801) joined to the hollow foot (21, 61, 81) and one outer branch (202, 602, 802) into which the opening (24, 64, 84) of the cap is pierced, and in that the inner and outer branches (201, 202; 601, 602; 801, 802) are apart from one another at least for the unlocked configuration of the hollow foot (21, 61, 81) and are shaped so as to allow an elastic deformation of at least part of the outer branch (202, 602, 802) when the foot (21, 61, 81) moves from its unlocked configuration to its locked configuration.

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Sub 4) 2. Fastening device according to claim 1, characterized in that the hollow foot (21, 61, 81) comprises a plurality of prongs (23, 25; 63, 65; 83, 85) having respective attached ends (63b, 65b; 83b, 85b) by which these prongs are joined to the cap (20, 60, 80), and respective radially converging free ends (63a, 65a; 83a, 85a), which between them define the minimum internal transverse dimension (Dmin) of the foot (21, 61, 81).

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3. Fastening device according to any of the preceding claims, characterized in that the male (1, 5, 7, 9) and female (2, 6, 8) parts comprise at least first (100; 52, 53; 72, 73; 92, 93) and second (23a, 25a; 63a, 65a; 83a, 85a)

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respective surface features disposed facing one another for an extreme relative axial position of the male and female parts, selectively obtained by completely inserting the barrel (10, 50, 70, 90) into the foot (21, 61, 81), the first and second surface features mutually cooperating to maintain the male (1, 5, 7, 9) and female (2, 6, 8) parts in the extreme relative axial position.

FIG. 20: 30306666  
Sub 6. 4. Fastening device according to claim 3, characterized in that the first surface feature is formed by a radial protuberance of the barrel, such as a screw thread (100; 52, 53) or a lug (72, 73; 92, 93).

5. Fastening device according to claim 4, characterized in that the first surface feature is a lug (72, 73; 92, 93) disposed facing a corresponding hole (612, 613; 812, 813) in the foot, and in that the lug passes through the hole when the foot (61, 81) is in both the unlocked configuration and the first rotational position relative to the barrel (70, 90).

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6. Fastening device according to any of the preceding claims combined with claims 2 and 3, characterized in that the second surface feature is formed by the free ends of the prongs (23a, 25a; 63a, 65a; 83a, 85a).

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7. Fastening device according to any of the preceding claims combined with claim 2, characterized in that the hollow foot (61, 81) comprises two prongs (63, 65; 83, 85) separated from one another by an open space (E) for the 5 unlocked configuration of the foot, and in that the barrel (50, 70, 90) has at least a second transverse dimension (D2), that selectively enters the open space, the result of which is that the hollow foot (61; 81) selectively adopts its unlocked configuration for a second relative rotational 10 position of the barrel (50, 70, 90) and the foot (61, 81), independently from the relative axial position of the male and female parts.

FIG. 20: 505005500

Sub C. 8. Fastening device according to claim 7, 15 characterized in that the male (7) and female (6) parts comprise at least third (714, 715) and fourth (614, 615) . respective surface features disposed facing one another for the locked configuration of the foot (61), these third and fourth surface features mutually cooperating to maintain the 20 male (7) and female (6) parts in their first relative rotational position.

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9. Fastening device according to any of the preceding claims, characterized in that at least one elastic radial 25 tab (26, 28; 86, 88) is provided in the opening (24) of the cap in order to selectively cooperate with the barrel.



constituted by a recess of the head and by a boss of the cap.

15. Fastening device according to any of the preceding 5 claims, characterized in that the barrel (70) has a collar (709) inserted into the opening of the cap counter to an elastic force and rendering the male and female parts inseparable from one another.

10 16. Fastening device according to any of the preceding claims, characterized in that the head (11, 51, 71) presses against the outer branch (202, 602), for the locked configuration of the foot (21, 61), and moves the inner and outer branches 601, 602 toward one another so as to generate 15 an elastic stress between them.

17. Fastening device according to any of claims 1 through 13, characterized in that the head (91) passes through the outer branch (802) and comes to rest against the 20 inner branch (801) of the cap (80) for the locked configuration of the foot (81).

Sub 18. Fastening device according to claim 17, characterized in that the male part (9) includes a second 25 head (91a) that remains outside the outer branch (802), even for the locked configuration of the foot (91).

19. Assembly constituted by a fastening device according to any of claims 1 through 16 and by a stack of panels (3, 4) in which bores (30, 40) are provided, and including a bottom panel (4), in which assembly the thickness of the stack is between 0.5 and 3 mm, while the bore in the bottom panel has a larger transverse dimension of 7.7 mm.

20. Assembly constituted by a fastening device according to any of claims 1 through 16 and by a stack of panels (3, 4) in which bores (30, 40) are provided, and including a bottom panel (4), in which assembly the thickness of the stack is between 3 and 4.5 mm, while the bore in the bottom panel (4) has a larger transverse dimension of 8.2 mm.

21. Assembly constituted by a fastening device according to any of claims 1 through 16 and by a stack of panels (3, 4) in which bores (30, 40) are provided and including a bottom panel (4), in which assembly the thickness of the stack is between 4.5 and 6 mm, while the bore in the bottom panel (4) has a larger transverse dimension of 8.7 mm.

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